

CLAIMS

What is claimed is:

- [0021] 1. A pyrotechnic initiator assembly with on-board circuitry, comprising:
- a) a pyrotechnic ignition element including two electrode pins;
  - b) control circuitry attached to said electrode pins;
  - c) an initiator body enclosing said electrode pins and said control circuitry;
  - d) an initiator electrical interface attached to said control circuitry, said interface including an exposed portion not enclosed within said initiator body.
- [0022] 2. The assembly of claim 1, wherein said initiator body is molded.
- [0023] 3. The assembly of claim 1, wherein said initiator assembly includes a gas seal area, and said control circuitry is remote from said gas seal area.
- [0024] 4. The assembly of claim 1, wherein said ignition element includes an output can having a flared bottom that is enclosed within said initiator body.
- [0025] 5. The assembly of claim 1, wherein said ignition element includes an insulator cup having a flared bottom that is enclosed within said initiator body.
- [0026] 6. The assembly of claim 4 wherein said ignition element includes an insulator cup having a flared bottom that is enclosed within said initiator body.
- [0027] 7. The assembly of claim 2, wherein said ignition element includes an output can having a flared bottom that is enclosed within said initiator body.
- [0028] 8. The assembly of claim 2, wherein said ignition element includes an insulator cup having a flared bottom that is enclosed within said initiator body.

[0029] 9. The assembly of claim 1, wherein said control circuitry is pre-encapsulated.

[0030] 10. The assembly of claim 1, wherein the overall axial length of said initiator assembly is less than 22 millimeters.

[0031] 11. A mating connector for use with a pyrotechnic initiator assembly having enclosed on-board circuitry and an initiator electrical interface, said mating connector comprising:

- a) a mating connector body;
- b) an enlarged initiator opening defined in said mating connector body and formed to receive a portion of the pyrotechnic initiator assembly that contains enclosed on-board circuitry; and
- c) a bus wire connected to said mating connector body and including a bus wire electrical interface disposed within said enlarged initiator opening, said bus wire electrical interface formed to mate with the initiator electrical interface.

[0032] 12. The mating connector of claim 11, wherein said enlarged initiator opening includes an engagement feature formed to snugly engage said initiator assembly within said enlarged initiator opening.

[0033] 13. The mating connector of claim 12, wherein said engagement feature prevents the initiator assembly from rotating within said enlarged initiator opening.

[0034] 14. The mating connector of claim 12, wherein said engagement feature is disposed in the region of said bus wire electrical interface.

[0035] 15. The mating connector of claim 12, wherein said bus wire electrical interface forms part of said engagement feature.

[0036] 16. The mating connector of claim 15, wherein said bus wire electrical interface is configured to elastically deform when said initiator assembly is received within said enlarged initiator opening, with the resulting degree of elastic deformation of said bus wire electrical interface being selected to ensure that the initiator assembly is held snugly within said enlarged initiator opening and to ensure that said electrical interfaces are held snugly together in electrical contact.

[0037] 17. An on-board circuitry pyrotechnic initiator and mating connector assembly, comprising:

- a) a pyrotechnic ignition element including two electrode pins;
- b) control circuitry attached to said electrode pins;
- c) an initiator body enclosing said electrode pins and said control circuitry;
- d) an initiator electrical interface attached to said control circuitry, said interface including an exposed portion not enclosed within said initiator body.
- e) a mating connector body including an enlarged initiator opening defined therein, said enlarged initiator opening formed to receive a portion of said initiator body enclosing said control circuitry; and
- f) a bus wire connected to said mating connector body and including a bus wire electrical interface disposed within said enlarged initiator opening, said bus wire electrical interface formed to mate with said initiator electrical interface.

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[0038] 18. The assembly of claim 17, wherein the overall axial length of said initiator and mating connector assembly is less than 22 millimeters when said initiator body is fully received within said enlarged initiator opening.

[0039] 19. The assembly of claim 17, wherein said enlarged initiator opening includes an engagement feature formed to snugly hold said initiator body in place when said initiator body is received within said enlarged initiator opening.

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